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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/406,684 09/27/99 TSUDA

K 1114-134

EXAMINER

MM91/0712

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SCHECHTER A

ART UNIT

PAPER NUMBER

2871

DATE MAILED:

07/12/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/406,684

Applicant(s)

TSUDA ET AL.

Examiner

Andrew Schechter

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 22, 23A-E, and 24 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites "wiring formed in a lower layer of the reflecting electrode". This is unclear, since no wiring is formed in the reflecting electrode. For examining purposes, it is assumed that the language intends a reflecting electrode to be connected to wiring on a lower level through a hole in the resin in the second region, as shown in Fig. 2 (and it is also assumed that the "second region" refers at least in part to the contact hole 30).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 6, and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by *Komatsubara et al.*, U.S. Patent No. 4,519,678.

Considering the limitations of claim 1, *Komatsubara* discloses a method of making an LCD apparatus with a pair of substrates and a liquid crystal layer, and reflecting means, comprising [see Fig. 1]: applying a photosensitive resin [col. 3, lines 8-13], forming asperities [lines 17-20], developing the exposed resin [lines 21-24], heat-treating [lines 30-33], and forming a reflecting film [lines 35-44]. The first region is the surface of the resin shown in Fig. 4, having different film thicknesses; the second region is the area of the contact hole, having a resin thickness (zero) smaller than those of the first region through having a different exposure amount. Claim 1 is therefore anticipated by *Komatsubara*.

The additional limitation of claim 2 is a reflective electrode connected through the contact hole with wiring, which is shown in Figs. 2 and 9. Claim 2 is therefore anticipated by *Komatsubara*.

The additional limitation of claim 6 is that the first and second regions are exposed with first and second photomasks. This is implied by the reference's separate description of exposing the first region [col. 3, lines 15-30] and of exposing the second region [col. 3, lines 34-35]. Claim 6 is therefore anticipated by *Komatsubara*.

The additional limitation of claim 8 is that low- and high-illuminance were used, respectively. This is inherent in the reference's invention, since the amount of material removed in the two regions is different. Claim 9 adds that circular or polygonal shapes are used, as seen in Figs. 2 and 3 of the reference, and that the total area of these regions is 20-40% of the total area, which can be calculated to be the case for the mask shown in Fig. 2. Claims 8 and 9 are therefore anticipated by *Komatsubara*.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Komatsubara* as applied to claim 1 above.

The additional limitation of claim 3 is that the second region is formed in a terminal portion in an outside display region. These (necessary and inherent) terminal portions are not shown explicitly by *Komatsubara*. Since they are outside the display

region, there is no reason for them to have the asperities of the first region; rather, they need to have the photoresist removed as per the second region in order to make electrical connections to them. Hence, motivated by these reasons, it would be obvious to one of ordinary skill in the art to satisfy this limitation. Claim 3 is therefore unpatentable over *Komatsubara*.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Komatsubara* as applied to claim 9 above, and further in view of *Mitsui, et al.*, U.S. Patent No. 5,408,345.

The additional limitation of claim 10 that the center-to-center distance of the adjoining regions is 5-50 μm is met (and also taught) by *Komatsubara* [col. 3, lines 53-58]. However, *Komatsubara* does not disclose that the regions are irregularly disposed, showing instead regular patterns in Figs. 2 and 3. However, it would have been obvious to one of ordinary skill to form an irregular pattern, being motivated by the teaching of *Mitsui*, in a similar invention, that "the bumps are arranged irregularly" [col. 5, line 43], which is "effective...to increase the intensity of light scattering in the direction vertical to the display screen, for the incident light from all angles." [lines 47-50]. Therefore, claim 10 is unpatentable over *Komatsubara* in view of *Mitsui*.

9. Claims 4, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Komatsubara* as applied to claims 1 and 6 above, and further in view of *Chang, et al.*, U.S. Patent No. 6,163,405.

The additional limitations of claims 4 and 5 are that a gray-tone photomask is used, having three sections of varying transparency, with two sections used to shape

the first region's photosensitive resin and a third section used to shape the second region's photosensitive resin, or vice versa. This is not taught explicitly by *Komatsubara*. However, it would be obvious to one of ordinary skill in the art to use a gray-tone photomask in this way, as shown in Fig. 17 of *Chang* being used to make an analogous reflector. Here, for instance, 50a, 50b, and 50c would image the first region while 50d images the second region. Use of gray-tone photomasks is well-known in the art, and one of ordinary skill would be motivated to use them in this invention for the reason given by *Chang* [col. 9, lines 30-39], that they are able to manufacture a complex structure with a single exposure. Thus, claims 4 and 5 are unpatentable.

When using a gray-tone photomask with a single exposure as described above, the exposure amounts for the first and second regions are identical. Thus, claim 7 is also unpatentable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (703) 306-5801. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Sikes can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 746-4711 for After Final communications.

Art Unit: 2871

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Andrew Schechter
July 9, 2001



JAMES A. DUDEK
PRIMARY EXAMINER